LISTING OF CLAIMS

1. (Currently Amended) A method using a computer ~~of~~ for simulating radio frequency signal processing circuitry, comprising:

forming a ~~compressed vector based equivalent~~ matrix representation of a radio frequency signal in a wireless communication system, wherein the radio frequency signal is substantially zero between a plurality of frequency bands, and wherein the matrix is formed of a plurality of pieces, each piece representing a frequency band;

performing processing on the ~~compressed vector based equivalent~~ matrix representation to simulate operation of the radio frequency processing circuitry on the radio frequency signal, the processing forming a processed ~~compressed vector based equivalent~~ matrix representation of the radio frequency signal; and

converting the processed ~~compressed vector based equivalent~~ matrix representation of the signal to a representation of the radio frequency signal as operated on by the radio frequency processing circuitry.

2. (Currently Amended) The method of claim 1 wherein information in the ~~compressed vector based equivalent~~ matrix representation of the radio frequency signal is limited to information of the signal in frequency bands of interest.

3. (Original) The method of claim 1 wherein the processing simulates non-linear operations.

4. (Canceled)

5. (Original) The method of claim 1 wherein the processing includes linear time invariant processing and non-linear time invariant processing.

6. (Original) The method of claim 1 wherein the processing is frequency domain processing.

7. (Original) The method of claim 1 wherein the processing is time domain processing.

8. (Original) The method of claim 1 wherein the processing simulates RF receiver front-end processing.

9. (Previously Presented) The method of claim 2 wherein the signal is centered about a carrier frequency, and the frequency bands of interest include the carrier frequency and harmonics of the carrier frequency.

10. (Original) The method of claim 9 wherein the signal is bandwidth limited to a bandwidth B, and the frequency bands of interest are limited to the bandwidth B.

11. (Currently Amended) A method using a computer ~~of~~ for modeling circuitry, comprising:

converting a ~~representations~~ representation of a first radio frequency ~~signals~~ signal to a ~~compressed vector based equivalent signals~~ matrix representation, wherein the first radio frequency signal is substantially zero between a plurality of frequency bands, and wherein the matrix is formed of a plurality of pieces, each piece representing a frequency band;

processing the ~~compressed equivalent signals~~ matrix representation to form a further ~~compressed equivalent signals~~ matrix representation to simulate operation of radio frequency circuitry on the first radio frequency ~~signals~~ signal; and

converting the further ~~compressed equivalent signals~~ matrix representation to a representation ~~representations~~ of a second radio frequency ~~signals~~ signal resulting from operation of the circuitry on the first radio frequency ~~signals~~ signal.

12. (Currently Amended) The method of modeling circuitry of claim 11 wherein the frequency bands of the first radio frequency signal ~~signals~~ are ~~signals~~ centered about a carrier frequency and harmonics and sub-harmonics of the carrier frequency and the compressed equivalent signals are formed by restricting information in the compressed

equivalent signals to signal components about the carrier frequency and harmonics and sub-harmonics of the carrier frequency.

13. (Currently Amended) The method of modeling circuitry of claim 12 wherein the first radio frequency ~~signals are~~ signal is bandwidth limited and the ~~compressed equivalent signals are~~ matrix representation is bandwidth limited.

14. (Currently Amended) A system for performing RF signal processing modeling, the system comprising a computer operative:

~~signal generator blocks forming~~ to form a ~~compressed vector based equivalent signal representations~~ matrix representation of a radio frequency ~~signals~~ signal, wherein the radio frequency signal is substantially zero between a plurality of frequency bands, and wherein the matrix is formed of a plurality of pieces, each piece representing a frequency band;

~~RF signal processing blocks processing~~ to process the ~~compressed vector based equivalent signal representations~~ matrix representation to simulate RF signal processing; and

~~conversion blocks converting~~ to convert the ~~compressed vector based equivalent signals~~ matrix representation to ~~RF signal representations of signals~~ a representation of an RF signal resulting from RF signal processing.

15. (Canceled)

16. (Canceled)

17. (New) A method according to claim 1, wherein the matrix representation is a frequency domain matrix representation, and wherein each piece of the matrix representation comprises a vector of a plurality of frequency components

18. (New) A method according to claim 17, wherein all pieces of the matrix representation have the same number of frequency components.

19. (New) A method according to claim 17, wherein the processing includes a convolution operation, and wherein performing the convolution operation includes:

converting the frequency domain matrix representation to a time domain matrix representation; and

performing a multiplication operation on the time domain matrix representation.

20. (New) A method according to claim 19, wherein the simulated radio frequency processing circuitry includes a non-linear block, wherein the operation of the non-linear block is simulated by evaluating a polynomial having a degree of at least two, and wherein the time domain matrix representation is the variable of the polynomial.

21. (New) A method according to claim 17, wherein the processing includes performing, on the frequency domain matrix representation, at least one of the operations of component-wise addition and component-wise multiplication.

22. (New) A method according to claim 17, wherein the processing includes performing a convolution on the frequency domain matrix representation, wherein the convolution is performed piecewise.

23. (New) A method according to claim 11, wherein the matrix representation is a frequency domain matrix representation, wherein processing includes performing convolution on the frequency domain matrix representation, and wherein the convolution includes:

converting the frequency domain matrix representation to a time domain matrix representation; and

performing multiplication on the time domain matrix representation.